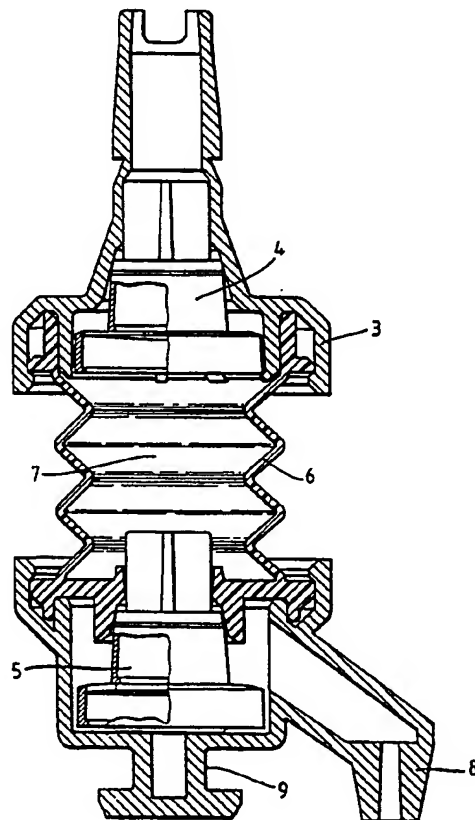




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁵ : G01F 11/08	A1	(11) International Publication Number: WO 94/07113 (43) International Publication Date: 31 March 1994 (31.03.94)
(21) International Application Number: PCT/EP93/02382 (22) International Filing Date: 1 September 1993 (01.09.93) (30) Priority data: 92202860.0 18 September 1992 (18.09.92) EP (34) Countries for which the regional or international application was filed: NL et al. (71) Applicant (for AU BB CA GB IE LK MN MW NZ SD only): UNILEVER PLC [GB/GB]; Unilever House, Blackfriars, London EC4 4BQ (GB). (71) Applicant (for all designated States except AU BB CA GB IE LK MN MW NZ SD): UNILEVER N.V. [NL/NL]; Weena 455, NL-3013 AL Rotterdam (NL).		(72) Inventors: BUNSCHOTEN, Gerrit, Klaas ; Laan van Zuylenveld 48, NL-3611 AJ Oud Zuilen (NL). VAN DER HEYDEN, Lambertus, Gerardus, P. ; Kampweg 17, NL-3981 EX Bunnik (NL). (74) Agent: KAN, Jacob, H.; Unilever N.V., Patent Division, P.O. Box 137, NL-3130 AC Vlaardingen (NL). (81) Designated States: AT, AU, BB, BG, BR, BY, CA, CH, CZ, DE, DK, ES, FI, GB, HU, JP, KP, KR, KZ, LK, LU, MG, MN, MW, NL, NO, NZ, PL, PT, RO, RU, SD, SE, SK, UA, VN, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i>
(54) Title: LIQUID DISPENSER (57) Abstract There is provided a dispenser for delivering aliquots of a liquid product comprising a housing (1) and a disposable refill package which is positioned inside the housing and comprises a collapsible reservoir (2) for the liquid product fitted with a bellow pump (3), whereby the bellow pump comprises an inlet valve (4) and an outlet valve (5) and is manually operable via indirect actuating means (10, 11), and whereby the housing is provided with a narrow opening into which a correspondingly shaped portion (9) of the bellow pump located near the outlet valve thereof, can be securely fitted.		



FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AT	Austria	FR	France	MR	Mauritania
AU	Australia	GA	Gabon	MW	Malawi
BB	Barbados	GB	United Kingdom	NE	Niger
BE	Belgium	GN	Guinea	NL	Netherlands
BF	Burkina Faso	GR	Greece	NO	Norway
BG	Bulgaria	HU	Hungary	NZ	New Zealand
BJ	Benin	IE	Ireland	PL	Poland
BR	Brazil	IT	Italy	PT	Portugal
BY	Belarus	JP	Japan	RO	Romania
CA	Canada	KP	Democratic People's Republic of Korea	RU	Russian Federation
CF	Central African Republic	KR	Republic of Korea	SD	Sudan
CG	Congo	KZ	Kazakhstan	SE	Sweden
CH	Switzerland	LI	Liechtenstein	SI	Slovenia
CI	Côte d'Ivoire	LK	Sri Lanka	SK	Slovak Republic
CM	Cameroon	LU	Luxembourg	SN	Senegal
CN	China	LV	Latvia	TD	Chad
CS	Czechoslovakia	MC	Monaco	TG	Togo
CZ	Czech Republic	MG	Madagascar	UA	Ukraine
DE	Germany	ML	Mali	US	United States of America
DK	Denmark	MN	Mongolia	UZ	Uzbekistan
ES	Spain			VN	Viet Nam
FI	Finland				

- 1 -

LIQUID DISPENSERTECHNICAL FIELD OF THE INVENTION

The present invention is concerned with a dispenser of the
5 kind for delivering aliquots of a liquid product from a
reservoir by means of a pump which is manually operable.
Such dispensers are often used in washrooms etc. for
dispensing small amounts of a liquid soap product for hand
washing purposes.

10

BACKGROUND AND PRIOR ART

Various dispensers of the above-indicated kind have been
described in the literature. For example, the US-patent
4,256,242 (Christine) discloses a liquid soap dispenser
15 comprising a housing, a collapsible bag for holding the
liquid soap product and an operating lever or handle for
actuating controlled amounts of soap from the bag.
The collapsible bag is connected to an outlet by means of a
flexible conduit which comprises a pump. These known types
20 of dispensers offer hygiene and ease of handling for the
user. However, one problem with this kind of dispensers
resides in the fact that only a small amount of liquid soap
may be dispensed at the time due to the limited capacity of
the peristaltic type of pump applied. The amount is usually
25 not more than 0.5 to 1 ml.

Another problem which has been encountered with this type
of pump is related to the way the pump operates: after the
pump has been actuated the pump tubing recovers to its
30 original shape and thereby sucks in liquid product for the
next shot. This sucking action of the tubing is directly
related to the memory properties thereof which could
decline depending on the material of the tubing and the
operating time of the pump. As a consequence, the dosage of
35 the pump per shot could decline.

- 2 -

In order to overcome this problem, it has been proposed in the British patent application 2 103 296 to provide the dispenser with a bellow pump fitted with an external spring. As a result of this spring, the recovery properties
5 of the bellow pump can be optimized to such extent that even liquid products of high viscosity can be satisfactorily applied in this dispenser. For reasons of easy handling, the dispenser disclosed by this document comprises a disposable refill which comprises a reservoir
10 and the bellow pump.

However, the disclosed dispenser is a rather specific one in that it can only be activated by electromagnetic means.

It is an object of the present invention to provide a
15 dispenser of the afore-mentioned kind, which does not possess these and other disadvantages. It is also an object to provide a dispenser which can be simply constructed, is user-friendly, and can be easily refilled.

We have now found that these and other objects can be
20 achieved by the dispenser of the present invention.

DEFINITION OF THE INVENTION

The present invention provides a dispenser for delivering aliquots of a liquid product comprising a housing (1) and a
25 disposable refill package which is positioned inside the housing and comprises a collapsible reservoir (2) for the liquid product fitted with a bellow pump (3), whereby the bellow pump comprises a product inlet valve and a product outlet valve and is manually operable via indirect actuating means (10,11), and whereby the housing is provided
30 with a narrow opening (9) into which a correspondingly shaped portion of the bellow pump located near the outlet valve thereof, can be securely fitted.

The present invention also provides a disposable refill
35 package suitable for use in a dispenser according to the invention, comprising a collapsible reservoir (2) filled with a liquid product and attached thereto a bellow pump

- 3 -

(3) provided with a narrow portion (9) which can be securely fitted into a correspondingly shaped opening located in the housing (1) of the dispenser.

- 4 -

DETAILED DESCRIPTION OF THE INVENTION

Preferably, the disposable refill package applied in the dispensing system of the present invention comprises a reservoir which is made of plastic material such as

5 polyethylene, polypropylene and PVC. For reasons of convenience and in order to reduce the risk that the liquid to be dispensed is contaminated when installing a new refill, the refill is made of one piece.

10 The bellow pump comprises a liquid inlet valve and a liquid outlet valve which are respectively closed and opened by manually operable actuating means during each dose.

Immediately after each dose, when the liquid outlet valve is closed, the liquid inlet valve is opened by the suction
15 action of the bellow when it recovers to its original position. As a result, full liquid communication with the reservoir is achieved and the internal volume of the bellow pump is refilled by liquid sucked in from out of the reservoir.

20 As a consequence of this action of the liquid inlet and outlet valves present in the bellow pump during and immediately after each dose, no air can enter the internal volume of bellow pump and reservoir and the risk of contamination of the liquid to be dispensed is minimized.

25 The material of the bellow pump is preferably such that the suction action of the bellow pump is kept more or less constant, also after many dosages have been done.

When the dispenser is used for dispensing more viscous
30 types of liquid, the bellow pump is preferably equipped with an external spring. This spring ensures that constant dosage volumes are obtained during the operating life of the dispenser even with highly viscous liquids because it forces the bellow pump back into its original shape after
35 each dose.

In order to ensure that the refill package is easily and

- 5 -

securely fitted in the housing of the dispenser, the housing is provided with a narrow opening into which a correspondingly shaped portion of the bellow pump located near the outlet valve thereof can be fitted. Furthermore, 5 this narrow opening ensures that only refill packs containing the desired type of liquid product will be mounted in the dispenser, because other packs containing different products simply will not fit.

This narrow opening is desirably in the form of a slit 10 having a width of less than 5 mm, preferably less than 2 mm.

The bellow pump is desirably provided with a discharge tube comprising a flow channel having a narrow internal opening 15 with a diameter of less than 3 mm, preferably less than 2 mm. The advantage of this type of discharge tube is that the flow rate of the liquid product flowing out of the bellow pump during each dose, is increased due to the narrow internal opening, which proved to have a self- 20 cleaning effect on the flow channel. The possibility of bacterial growth entering the valve is thereby further diminished.

For reasons of ease of handling, the dispenser of the 25 present invention is equipped with manually operable indirect actuating means. These may practically comprise a push rod which is coupled to the bellow pump via a tilting table.

30 The internal volume of the reservoir gradually decreases when liquid product is taken out and dispensed. When the reservoir is pumped empty, underpressure is created and, as a consequence, the bellow of the pump will be kept in a collapsed position. The resulting reduction in length of 35 the bellow pump can be used as an empty pack indicator.

Dispensers comprising a bellow pump with a dosing capacity

- 6 -

of from about 0.1 to 10 ml are very suitable for use in washrooms. This type of dispensers having a dosing capacity in the mentioned range can be made much more compact than dispensers with peristaltic or plunger pumps with the same dosing capacity.

The invention will now be better explained by way of the preferred embodiment shown in the accompanying drawings of which:

- 10 Figure 1 shows cross-sectional views of a dispenser according to the invention including a housing, a collapsible reservoir and a bellow pump, whereby the bellow pump is not activated (a) respectively activated (b);
Figure 2 shows a cross-sectional view of the bellow pump,
15 including an inlet and outlet valve, and a discharge tube.

In Figure 1, a housing (1) is shown comprising a refill package which comprises a reservoir (2) and a bellow pump (3). The dispenser can be manually operated with indirect
20 actuating means comprising a push rod (10) which is coupled to a tilting table (11) which in turn is connected to the bellow pump (3).

As shown in Figure 1, a narrow portion (9) is connected to the bellow pump (3) which portion is used for securely
25 positioning the refill package in the housing of the dispenser. Furthermore, the bellow pump is provided with a discharge tube (8) which comprises a flow channel having a narrow internal opening.

It can also be noticed that an external spring (12) is
30 present between tilting table (11) and the housing. This spring ensures that constant volumes are dosed even when applying high viscosity liquids.

Figure 2 shows a bellow pump provided with an inlet valve
35 (4), an outlet valve (5) and a bellow section (6). Because the internal volume of the bellow pump contains the liquid to be dispensed during the next dose, the bellow pump

- 7 -

functions as a type of dosing section.

It is emphasized that the dispenser shown in the Figure illustrates only a preferred embodiment of the invention
5 and that various constructional alternatives will be immediately evident to the man skilled in the art, without departing from the scope of the present invention.

- 8 -

CLAIMS

1. A dispenser for delivering aliquots of a liquid product comprising a housing (1) and a disposable refill package
5 which is positioned inside the housing and comprises a collapsible reservoir (2) for the liquid product fitted with a bellow pump (3), whereby the bellow pump comprises an inlet valve (4) and an outlet valve (5) and is manually operable via indirect actuating means (10,11), and whereby
10 the housing is provided with a narrow opening into which a correspondingly shaped portion (9) of the bellow pump located near the outlet valve thereof, can be securely fitted.
- 15 2. A dispenser according to claim 1, wherein the bellow pump is provided with an external spring (12).
3. A dispenser according to claim 1 or 2, wherein the narrow opening in the housing (1) is in the form of a slit
20 having a width less than 5 mm, preferably less than 2 mm.
4. A dispenser according to any of claims 1-3, wherein the bellow pump is provided with a discharge tube (8) comprising a flow channel having a diameter of less than 3
25 mm, preferably less than 2 mm.
5. A dispenser according to any of claims 1-4, wherein the bellow of the bellow pump is kept in a collapsed position as a result of the underpressure created when the reservoir
30 is pumped empty.
6. A dispenser according to any of claims 1-5, wherein the bellow pump has a capacity of from about 0.1 to about 10 ml.

- 9 -

7. A disposable refill package suitable for use in a dispenser according to any of claims 1-5, comprising a collapsible reservoir (2) filled with a liquid product and
5 attached thereto a bellows pump (3) provided with a narrow portion (9) which can be securely fitted into a correspondingly shaped opening located in the housing (1) of the dispenser.

10

Fig.1(a)

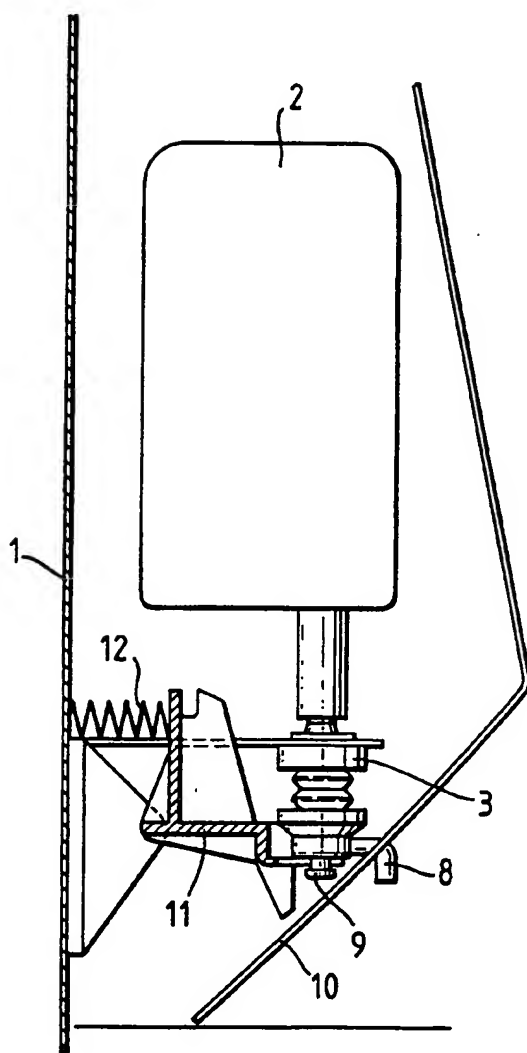
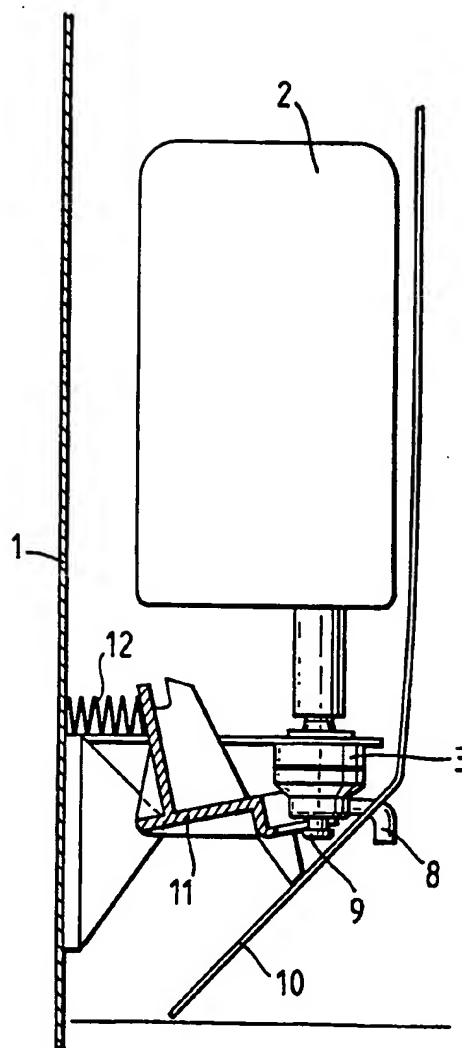
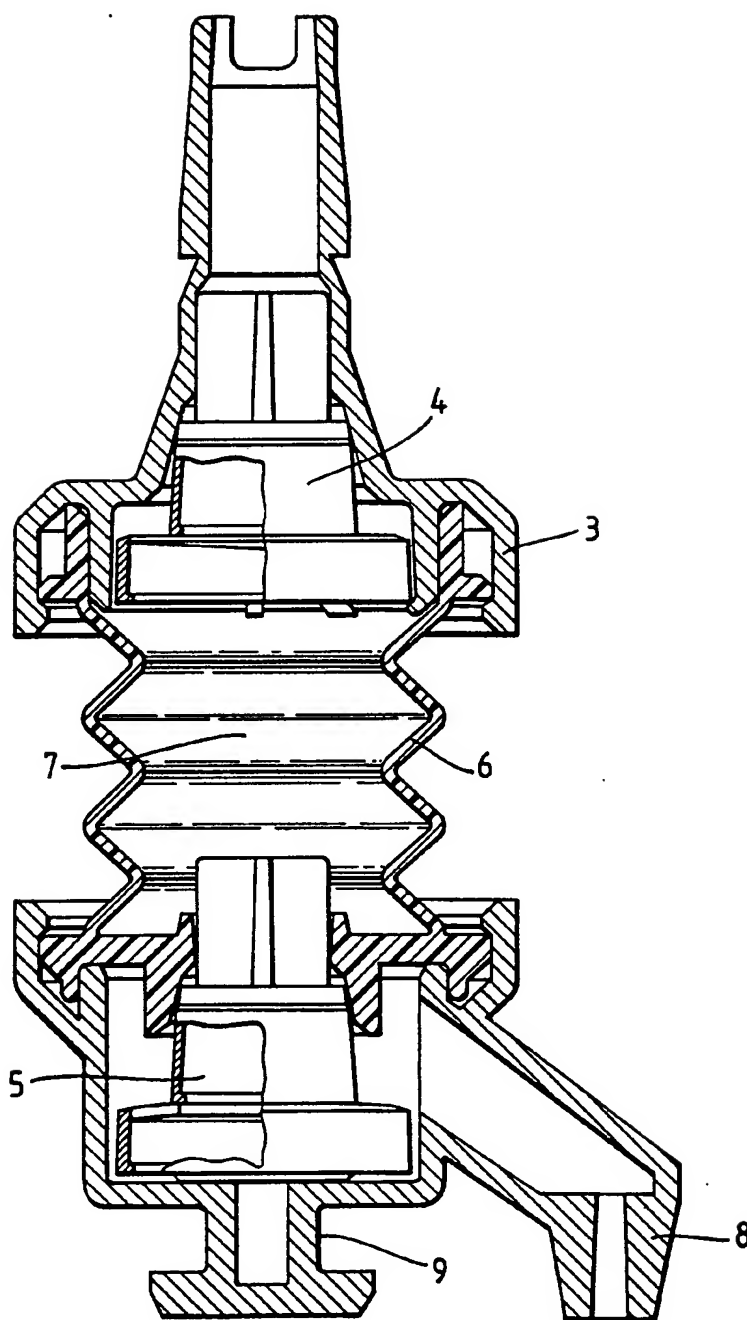


Fig.1(b)



2/2

Fig. 2.

SUBSTITUTE SHEET

INTERNATIONAL SEARCH REPORT

Internat Application No
PCT/EP 93/02382

A. CLASSIFICATION OF SUBJECT MATTER
IPC 5 G01F11/08

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 5 G01F A47K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE,A,27 27 679 (O. KAISER) 9 November 1978 see page 6, paragraph 2; figure 1 ---	1
A	EP,A,0 304 567 (R. ANDRIS) 1 March 1989 see column 6, line 22 - column 7, line 26; figure 1 ---	1
A	US,A,4 978 036 (W.D. BURD) 18 December 1990 see column 2, line 59 - column 4, line 14; figures 1,2,10,11 ---	1
A	FR,A,2 392 366 (SOC. PRODENE) 22 December 1978 see page 6, line 11 - page 7, line 5; figure 1 --- -/--	1

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&" document member of the same patent family

Date of the actual completion of the international search

1 December 1993

Date of mailing of the international search report

17. 12. 93

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+ 31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+ 31-70) 340-3016

Authorized officer

Heinsius, R

INTERNATIONAL SEARCH REPORT

Interns I Application No
PCT/EP 93/02382

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US,A,4 256 242 (W.C. CHRISTINE) 17 March 1981 cited in the application see column 2, line 7 - column 6, line 51; figures 1-8	1
A	FR,A,2 502 774 (DAGMA) 1 October 1982 see page 7, line 1 - page 13, line 35; figures 1-3	1
A	& GB,A,2 103 296 cited in the application	

INTERNATIONAL SEARCH REPORT

Information on patent family members

Internat'l Application No

PCT/EP 93/02382

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE-A-2727679	09-11-78	NONE	
EP-A-0304567	01-03-89	JP-A- 1037361 US-A- 4863070	08-02-89 05-09-89
US-A-4978036	18-12-90	NONE	
FR-A-2392366	22-12-78	DE-A- 2717878 GB-A- 1521665 US-A- 4120429	03-11-77 16-08-78 17-10-78
US-A-4256242	17-03-81	NONE	
FR-A-2502774	01-10-82	DE-A,C 3131650 AU-B- 555234 AU-A- 8115282 BE-A- 892533 CA-A- 1188269 CH-A- 659891 GB-A,B 2103296 JP-C- 1496871 JP-A- 57169620 JP-B- 63048008 LU-A- 84030 NL-A- 8200969 SE-B- 454385 SE-A- 8201867 US-A- 4518105	14-10-82 18-09-86 30-09-82 16-07-82 04-06-85 27-02-87 16-02-83 16-05-89 19-10-82 27-09-88 08-07-82 18-10-82 25-04-88 27-09-82 21-05-85
GB-A-2103296	16-02-83	DE-A,C 3131650 AU-B- 555234 AU-A- 8115282 BE-A- 892533 CA-A- 1188269 CH-A- 659891 FR-A,B 2502774 JP-C- 1496871 JP-A- 57169620 JP-B- 63048008 LU-A- 84030	14-10-82 18-09-86 30-09-82 16-07-82 04-06-85 27-02-87 01-10-82 16-05-89 19-10-82 27-09-88 08-07-82

INTERNATIONAL SEARCH REPORT

Information on patent family members

Intern: 1 Application No

PCT/EP 93/02382

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
GB-A-2103296		NL-A- 8200969	18-10-82
		SE-B- 454385	25-04-88
		SE-A- 8201867	27-09-82
		US-A- 4518105	21-05-85
